6a) 2.875_{10}

1	0	.	1	1	1	0	0	0
2	1		$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{16}$	$\frac{1}{32}$	$\frac{1}{64}$

10.111_2

010	.	111
2		7

2.7_8

0010	.	1110
2		E

$2.E_{16}$

.1796875

0	.	0	0	1	0	1	1	1	0	0	0
1		$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{16}$	$\frac{1}{32}$	$\frac{1}{64}$	$\frac{1}{128}$			

$0.0\ 0\ 1\ 0\ 1\ 1\ 1_2$

000	001	011	100
0	1	3	4

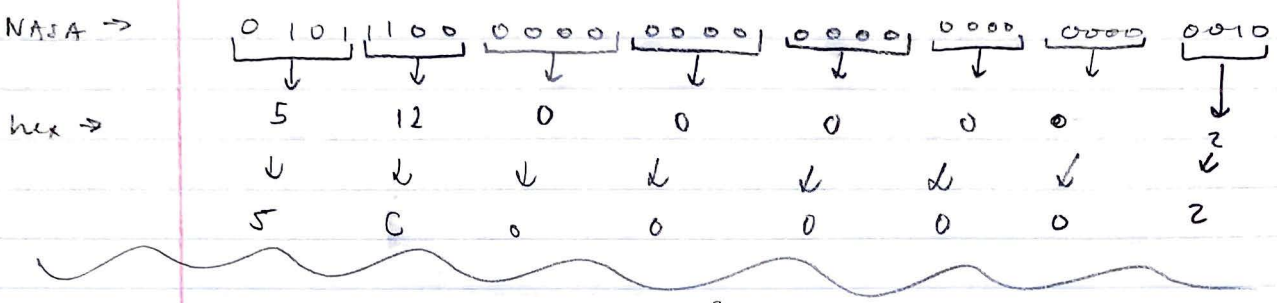
$.134_8$

0000	0010	1110
0	2	E

$.2E_{16}$

10.111 → NASA & 8 nibble hex

10.111 ⇒ $0.10111 \cdot 2^2$



$0.00010111 \rightarrow 0.10111 \cdot 2^{-2}$

0101 1100 0000 0000 0000 0000 0000 0010

negative

0101 1100 0000 0000 0000 0000 1111 1101

+1

NASA → 0101 1100 0000 0000 0000 0000 1111 1110

8 nibble hex → 5 C 0 0 0 0 F E

-2.875

from online problem

-10.111 , -2.7_8 , $-2.E_{16}$

$-0.10111 \cdot 2^2$

0101 1100 0000 0000 0000 0000 0000 0010

1010 0011 1111 1111 1111 1111 0000 0010

NASA → 1010 0100 0000 0000 0000 0000 0000 0010

(1 nibble hex) A 4 0 0 0 0 0 2

-.1796875

from online problem

-0.0010111 , $-.134_8$, $-.2E_{16}$

$-0.10111 \cdot 2^{-2}$

0101 1100 0000 0000 0000 0000 0000 0010

1010 0011 1111 1111 1111 1111 1111 1101

1010 0100 0000 0000 0000 0000 1111 1110

A 4 0 0 0 0 F E

5 9 9 9 9 9 0 1

0101 1001 1001 1001 1001 1001 0000 0001

$0.101\ 1001\ 1001\ 1001\ 1001\ 1001 \cdot 2^{1}$

$1.01\ 1001\ 1001\ 1001\ 1001\ 1001$

$$1 + \frac{1}{4} + \frac{1}{8} + \frac{1}{64} + \frac{1}{128} + \frac{1}{1024} + \frac{1}{2048} + \frac{1}{16384} + \frac{1}{32768} + \frac{1}{524288} + \frac{1}{1048576} + \frac{1}{8388608}$$

$$= 1.3999\ 9968\ 77$$

5 9 9 9 9 9 0 2

0101 1001 1001 1001 1001 1001 0000 0010

$0.101\ 1001\ 1001\ 1001\ 1001\ 1001 \cdot 2^{2}$

$10.1\ 1001\ 1001\ 1001\ 1001\ 1001$

$$2 + \frac{1}{2} + \frac{1}{4} + \frac{1}{2^5} + \frac{1}{2^6} + \frac{1}{2^9} + \frac{1}{2^{10}} + \frac{1}{2^{12}} + \frac{1}{2^{13}} + \frac{1}{2^{17}} + \frac{1}{2^{18}} + \frac{1}{2^{21}}$$

$$= 2.7999\ 9714$$

A 6 6 6 6 7 F E

1010 0110 0110 0110 0110 0111 1111 1110

signed bit, sign-magnitude one signed bit, ones-complement one

1010 0110 0110 0110 0110 0110 1111 1101

complement

0101 1001 1001 1001 1001 1001 0000 0010

$-0.101\ 1001\ 1001\ 1001\ 1001\ 1001 \cdot 2^{-2}$

$-0.00101\ 1001\ 1001\ 1001\ 1001\ 1001$

$-\left(2^{-3}+2^{-5}+2^{-6}+2^{-9}+2^{-10}+2^{-13}+2^{-14}+2^{-17}+2^{-18}+2^{-21}+2^{-22}+2^{-25}\right)$

$= -.171\ 4999\ 9821$